

Amendments to the Specification:

Please amend paragraph [0022] as shown below:

The catalyst of the present embodiment may be made by a number of processes known to those skilled in the art. For example, the catalyst may be applied to a support material such as cordierite by a washcoat and then calcined at high temperature. Preferably, such a washcoat will include 10 wt % to about 25 wt % of the oxygen storage component and sufficient precious metal to form a catalyst having from about 5 to about 150 grams of precious metal per cubic foot of catalyst formed. Specifically, the catalysts of the present ~~invention~~ embodiment are made by adding alumina to water along with the proper amount of a mixed oxide(s) that produces the desired concentration of mixed oxide in the final catalyst. These materials are mixed to form a slurry. The slurry is milled with nitric acid and some additional water and then coated onto a brick (e.g., a cordierite substrate) which is then calcined in air at 450°C. The calcined brick is impregnated with a solution of the salts of the desired precious metals and the NOx adsorber materials. The brick is calcined again in air at 450°C to fix the precious metals and NOx adsorber materials to the washcoat.

Please amend paragraph [0023] as shown below:

It should be appreciated that it is not the amount of oxygen storage component per se which leads to the advantages of the present ~~invention~~ embodiment in reducing the NOx release during the rich purges, increasing the NOx conversion efficiency under stoichiometric conditions, and increasing the sulfur tolerance. Instead, it is the oxygen storage capacity that is the focus of this ~~invention~~ embodiment (i.e., the amount of oxygen that the catalyst is able to store expressed as micromoles of oxygen per gram of catalyst). When such oxygen storage components are not in contact with the precious metal, the oxygen storage capacity of the oxygen storage component is low at temperatures below 700°C. As the oxygen storage component comes in closer spatial contact with the oxygen storage component, the amount of oxygen that the oxygen storage component and the catalyst are able to store at temperatures below 700°C increases.

Please amend paragraph [0024] as shown below:

The selection of the proper amount of oxygen storage capacity of the catalyst of the present ~~invention~~ embodiment is determined by consideration of a number of factors. Oxygen storage capacity improves the sulfur tolerance of the NO_x trap. Presumably, sulfur tolerance is improved by the adsorption of some of the sulfur onto the oxygen storage materials, which prevents that portion of the sulfur from poisoning the NO_x storage sites. Figure 3 shows the sulfur poisoning results for NO_x traps containing various amounts of a cerium-containing mixed oxide. The figure shows the drop in average NO_x storage efficiency for one minute of lean operation between 0 hours and 9 hours for traps that were poisoned five times each at 400°C with 9 ppm SO₂. After each poisoning run, the traps were desulfated at high temperatures to remove the sulfur and regenerate the trap. Figure 3 shows that the drop in storage efficiency over the 9 hours of poisoning decreased as the content of mixed oxide was increased from 0% to 37%; no further improvement was observed with higher contents of mixed oxide. The trap with no mixed oxide had an average drop in NO_x storage efficiency of about 40%, while the trap with 37% mixed oxide had an average drop in NO_x storage efficiency of about 16%. These results indicate that the presence of cerium in the NO_x trap improves the sulfur tolerance of the trap. Moreover, the ceria improves the desulfation characteristics of the trap by promoting the water-gas-shift ("WGS") reaction. The WGS reaction produces additional hydrogen, which has been shown to be the best agent for desulfating the poisoned trap. The presence of the oxygen storage component (e.g. ceria) can also improve the NO_x storage capability at low temperatures, as cerium is able to provide some NO_x storage capacity at low temperatures (e.g., 300°C). Finally, the oxygen storage component can also be beneficial for the thermal durability of the trap. For example, ceria is known to stabilize the dispersion of the precious metals.

Please amend paragraph [0036] as shown below:

In summary, the experiments set forth above demonstrate that the methods of various embodiments of the present invention advantageously provide a number of benefits

while minimizing the NO_x release at 300°C, 400°C, and 500°C. Specifically, the optimal value of the OSC of the trap is observed to be about 60 micromoles of oxygen per gram of catalyst at 500°C. It will be appreciated that the OSC of the catalyst decreases as the temperature decreases. Accordingly, by limiting the OSC of the trap to 60 micromoles/gram at 500°C, the OSC will be equal to or less than 60 micromoles/gram across the lean operating window of the NO_x trap (i.e., 250-500°C.) As shown in Figure 2, a NO_x trap with this approximate level of fresh OSC had much higher stoichiometric NO_x conversion than a non-cerium NO_x trap after the catalysts were aged on a high temperature aging schedule. Finally, as shown in Figure 3, this approximate level of fresh OSC provided greatly improved sulfur tolerance relative to that of a non-cerium NO_x trap.